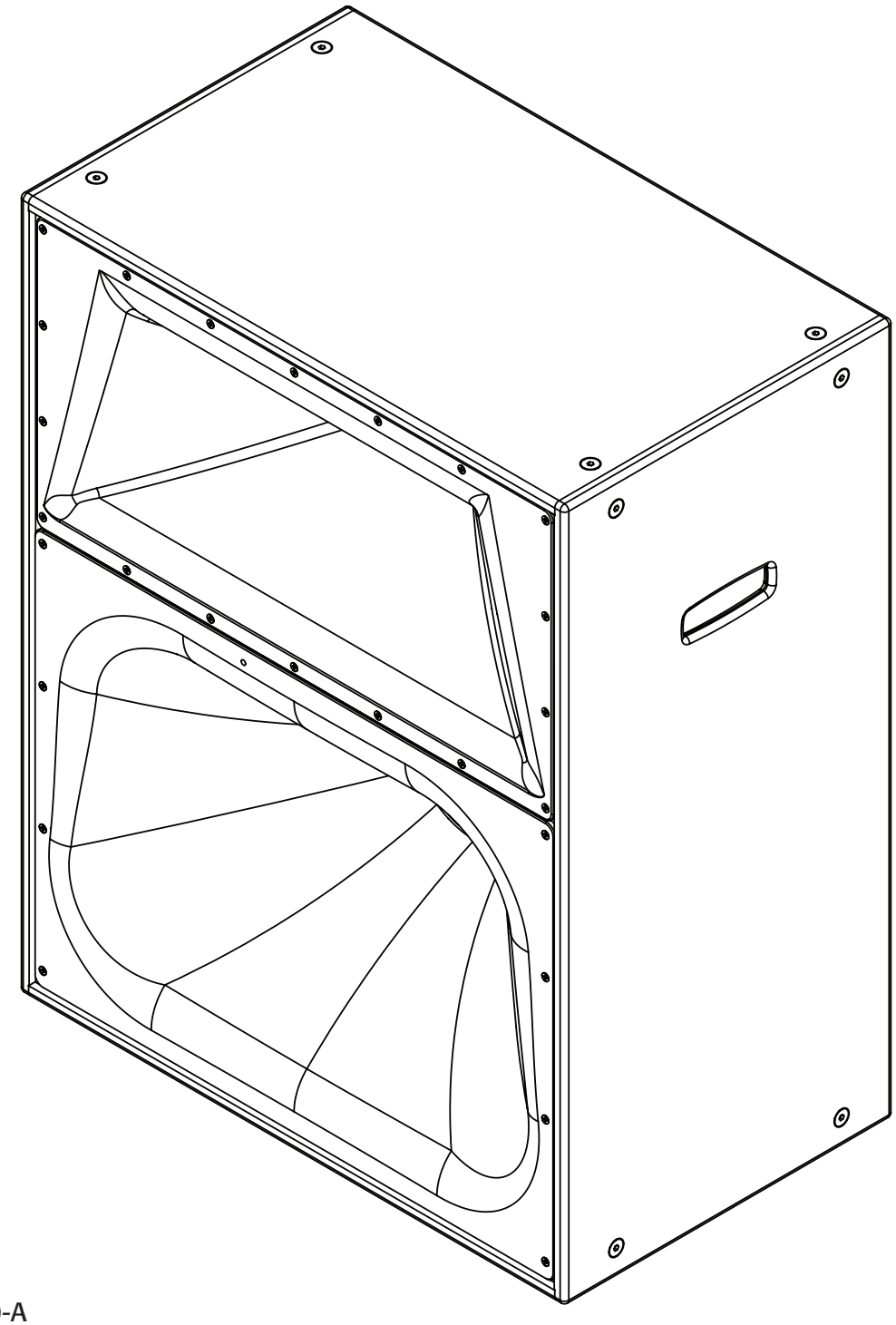
MHV-1090F

Cinema Loudspeaker User Manual

10" Mid, Coaxial High/Very High Compression Driver



TD-000303-00-A

IMPORTANT SAFETY PRECAUTIONS AND EXPLANATION OF SYMBOLS

⚠ WARNING! ⚠

Before placing, installing, rigging, or suspending any speaker product, inspect all hardware, suspension, cabinets, transducers, brackets and associated equipment for damage. Any missing, corroded, deformed, or non-load rated component could significantly reduce the strength of the installation or placement. Any such condition severely reduces the safety of the installation and should be immediately corrected. Use only hardware which is rated for the loading conditions of the installation and any possible short-term, unexpected overloading.

Never exceed the rating of the hardware or equipment.

Consult a licensed, professional engineer regarding physical equipment installation. Ensure that all local, state and national regulations regarding the safety and operation of loudspeakers and related equipment are understood and adhered to. This product is capable of producing sound pressure levels that can permanently damage human hearing. Always keep sound pressure levels in the listening area below levels that can damage human hearing.

Warranty (USA only; other countries, see your dealer or distributor)

Disclaimer

QSC Audio Products, LLC is not liable for any damage to amplifiers or any other equipment that is caused by negligence or improper installation and/or use of this loudspeaker product.

QSC Audio Products 3-Year Limited Warranty

QSC Audio Products, LLC ("QSC") guarantees its products to be free from defective material and/or workmanship and will replace defective parts and repair malfunctioning products under this warranty when the defect occurs under normal installation and use-provided the unit is returned to our factory, one of our authorized service stations or an authorized QSC International Distributor via pre-paid transportation with a copy of proof of purchase (i.e., sales receipt). This warranty provides that the examination of the return product must indicate, in our judgment, a manufacturing defect. This warranty does not extend to any product which has been subjected to misuse, neglect, accident, improper installation, or where the date code has been removed or defaced. QSC shall not be liable for incidental and/or consequential damages. This warranty gives you specific legal rights. This limited warranty is freely transferable during the term of the warranty period. The warranty on QSC products is NOT VALID if the products have been purchased from an unauthorized dealer/online e-tailer, or if the original factory serial number has been removed, defaced, or replaced in any way. Damage to, or loss of any software or data residing on the product is not covered. When providing repair or replacement service, QSC will use reasonable efforts to reinstall the product's original software configuration and subsequent update releases, but will not provide any recovery or transfer of software or data contained on the serviced unit not originally included in the product.

Customers may have additional rights, which vary from state to state or from country to country. In the event that a provision of this limited warranty is void, prohibited or superseded by local laws, the remaining provisions shall remain in effect.

Periodically, this warranty is updated. To obtain the most recent version of QSC's warranty statement, please visit www.qscaudio.com.

Contact us at 800-854-4079 or visit our website at www.qscaudio.com.

The QSC limited warranty is valid for a period of three (3) years from date of purchase in the United States and many (but not all) other countries.

For QSC warranty information in countries other than the United States, contact your authorized QSC international distributor. A list of QSC International distributors is available at www.qscaudio.com.

To register your QSC product online, go to www.qscaudio.com and select "Product Registration". Other questions regarding this warranty can be answered by calling, e-mailing or contacting your authorized QSC distributor.

© 2009, QSC Audio Products, LLC. Patents may apply or be pending.
QSC is a registered trademark of QSC Audio Products, LLC. "QSC" and the QSC logo are registered with the U.S. Patent and Trademark Office.
All trademarks are the property of their respective owners.

Introduction

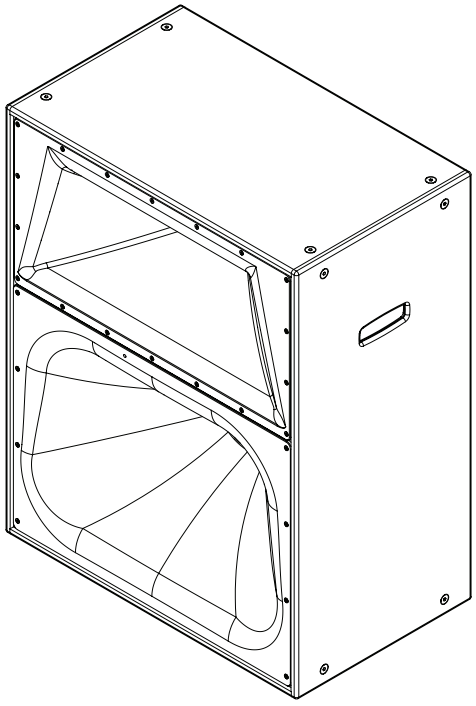
The MHV-1090F system provides the mid, high, and very high-frequency components of a DCS 4-way loudspeaker system. It is designed specifically for large format cinemas and other applications where a point source surround channel or screen channel must be suspended or flown rather than mounted on a platform or floor.

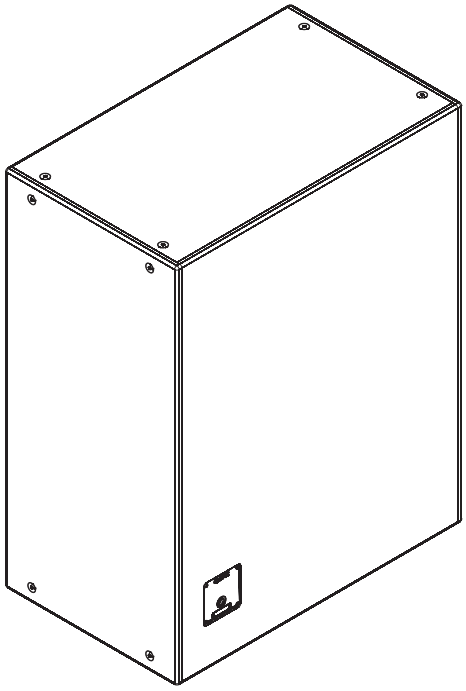
The high frequency horn is a low-distortion waveguide providing highly articulate dialogue without the coloration associated with conventional horn loudspeakers. Both horns feature broad horizontal and vertical coverage to ensure audio integrity is delivered to every seat in the auditorium.

The horn and driver assemblies are mounted in a rugged, tour-grade plywood enclosure designed for safe suspension via M10 attachment points. Heavily braced, tour grade construction provides great strength while keeping weight to a minimum. The rear panel is removable for access to the drivers and HF/VHF crossover if service should ever be necessary.

The MHV-1090F includes a driver protection and high/very high-frequency crossover network to assure reliable operation. DC blocking capacitors protect against DC or low-frequency signals that could damage an unprotected driver. A 12 dB per octave crossover seamlessly blends the high and very high frequency elements and allows operation in tri-amp mode. Outboard processing, such as the DCP 300 or DCM 30D, is required to provide the active crossover between the low, mid, and high/very high-frequency drivers and separate amplifiers are required for the low, mid, high/very high-frequency channels.

The MHV-1090F is pre-assembled to reduce field assembly time. Sixteen M10 attachment points provide safe and secure means to suspend the enclosure via M10 forged eyebolts (not included) or user-supplied brackets.





Suspension

The MHV-1090F comes with 16 M10 attachment points and bolts installed on the enclosure. Only remove the required bolts for mounting and leave all other bolts installed to insure that the enclosure is properly sealed and retains full strength. We recommend the use of serviceable thread locking compound when installing the bolts to prevent loosening due to vibration. Use only load rated hardware.

The LF-4215-8F and MHV-1090F have the exact same external dimensions and attachment points. They can be supported individually or as a pair, depending on what works best for the application. The boxes can be arrayed vertically and horizontally. When paired together, it is recommended that the mounting structure connects both boxes to the suspension system rather than suspending the boxes from one another. Commercially available uni-strut or other custom fabricated brackets can be used.

Suspending the system from the top rear attachment points results in a slight down angle that may be close to the desired aiming for many installations. The bottom attachment points can be used for a pull-back cable to fine tune the tilt of the system.

Suspension

Before placing, installing, rigging, or suspending any speaker product inspect all hardware, suspension, cabinets, transducers, brackets and associated equipment for damage. Any missing, corroded, deformed, or non-load rated component could significantly reduce the strength of the installation or placement. Any such condition severely reduces the safety of the installation and should be immediately corrected. Use only hardware which is rated for the loading conditions of the installation and any possible short-term, unexpected overloading.

Never exceed the rating of the hardware or equipment.

Consult a licensed, professional engineer regarding physical equipment installation. Ensure that all local, state and national regulations regarding the safety and operation of loudspeakers and related equipment are understood and adhered to.

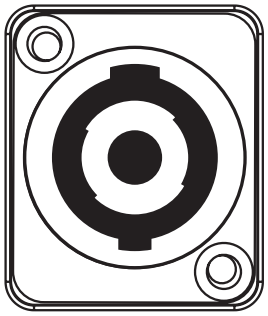
Ensure all attachment points are installed and correctly tightened in order to maintain enclosure's rated strength. Additionally, air leaks resulting from missing hardware will degrade the loudspeaker's performance. Use only QSC's M10 forged shoulder eye bolts. Contact QSC Technical Services department for complete information.

Aiming

The aiming axis of the HF and MF horns is tilted down 10 degrees relative to the cabinet and this should be taken into account when adjusting the coverage in the room. In general, the aiming axis of the horns should be directed at the prime seating area 2/3 of the way back or across the auditorium. Slight adjustments may be needed to achieve the best possible compromise when covering the near and far seating area.

Connections

Amplifier connections to the MHV-1090F are made on the rear panel via a Neutrik NL4P Speakon™ connector supplied by the installer. This 4 conductor connector provides power to both the MF and HF/VHF sections of the MHV-1090. The MF connections use the 1+ and 1- terminals and the HF/VHF connections use the 2+ and 2- terminals. Pre-made Speakon cables using high grade, 4 conductor stranded wire are readily available from a number of suppliers and is highly recommended.



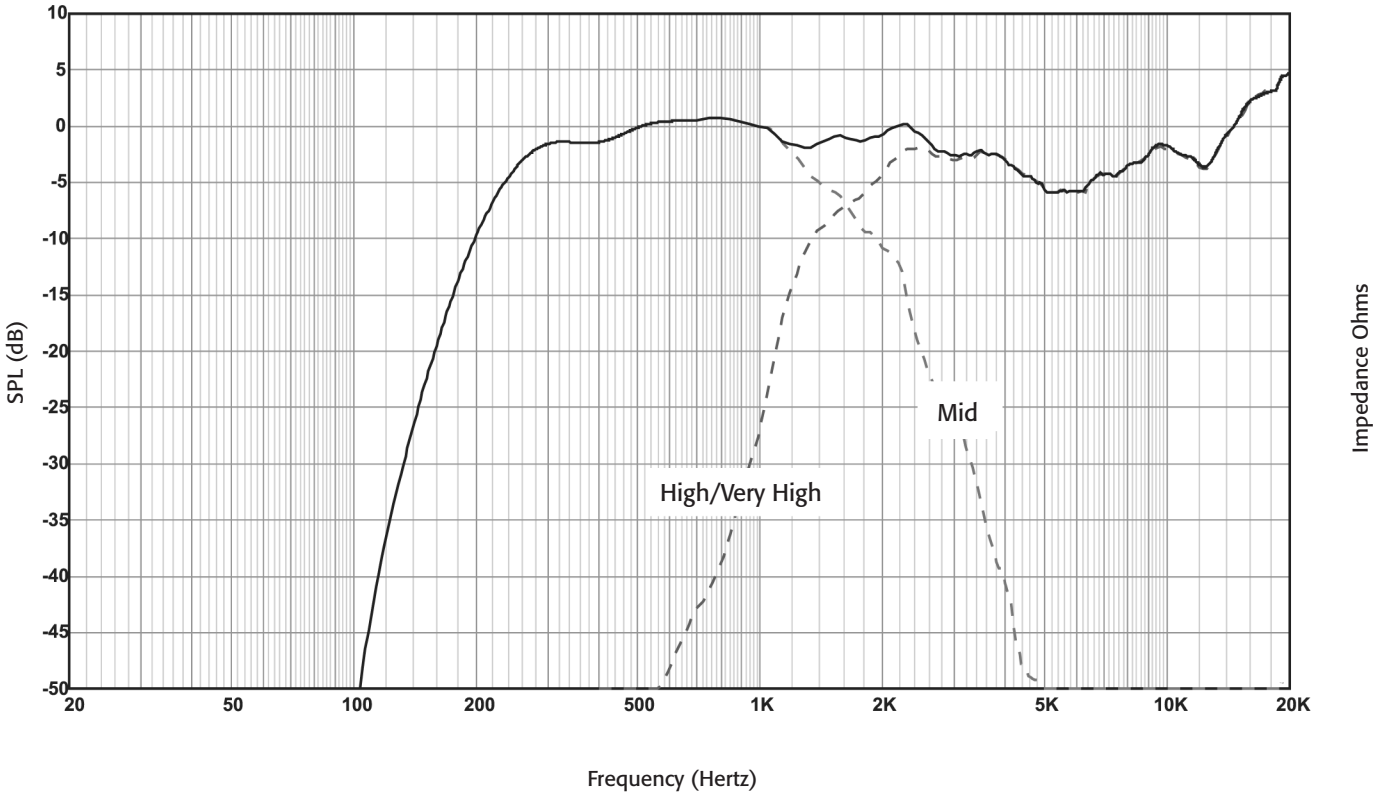
	MF		HF/VHF	
INPUT PINOUT	1+	1-	2+	2-
	POS	NEG	POS	NEG

NOTE! Maintain proper loudspeaker connection polarity throughout the entire system for maximum performance. Do not apply full range signal to the MHV-1090! All required signal processing must be done before the signal is applied to the loudspeaker.

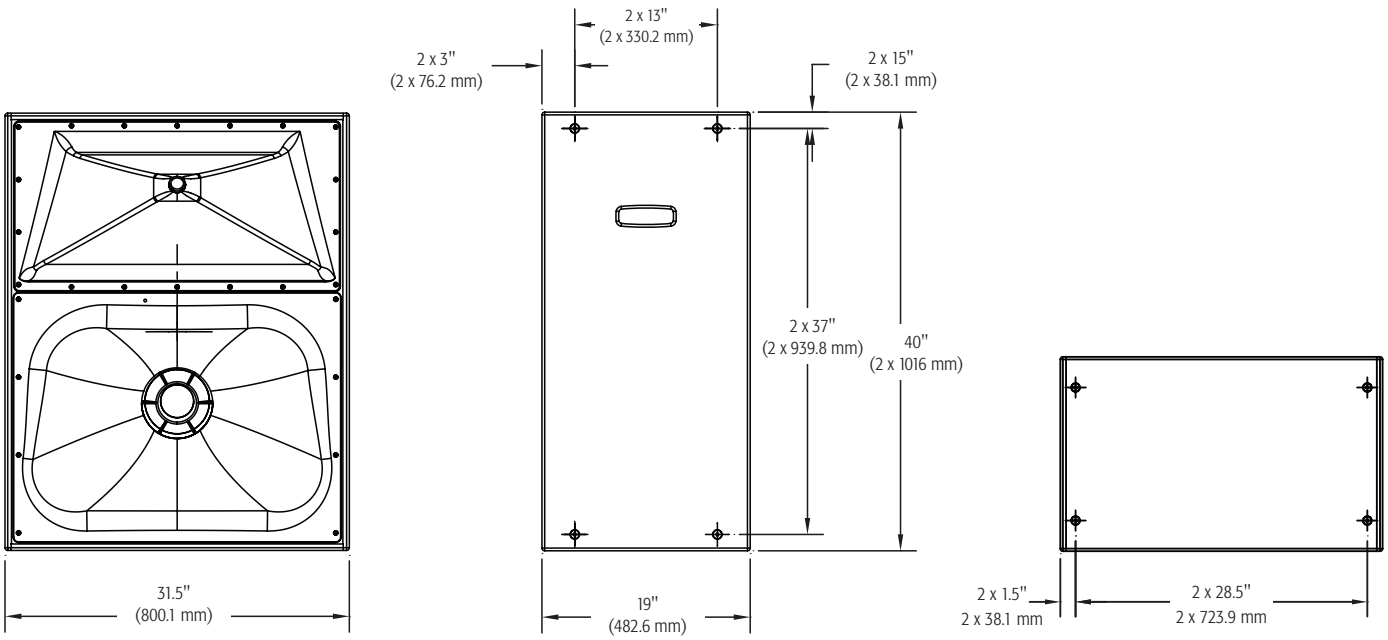
Specifications

	MHV-1090F
Frequency Range	250 Hz – 22 kHz
Maximum Output (full space / watt / 1 meter)	Mid-frequency 135.5 dB SPL High-frequency/very high-frequency 137 dB SPL
Impedance	8Ω nominal, mid-frequency and high/very high-frequency
Maximum Input Power (AES method, 2 hrs)	Mid-frequency 275 watts High/very high-frequency 230 watts (calculated, sum of high and very high-frequency individual ratings)
Sensitivity (watt / 1 meter)	Mid-frequency 105 SPL High/very high-frequency 110 dB SPL
Crossover Frequencies	Mid-frequency 250 Hz or higher, high/very high-frequency 1.7 kHz, at least 24 dB/octave
Crossover Network	High-frequency to very high-frequency crossover at 7 kHz, 12 dB per octave, DC blocking capacitors for driver protection
Transducers	Mid-frequency: 10" high-efficiency mid-range, phase-ring loaded High-frequency: 1.5" exit, 3.5" voice coil polyester diaphragm coaxial compression driver Very High-frequency: 1.5"exit, 1.75" voice coil polyester diaphragm coaxial compression driver
Nominal Coverage	90° horizontal x +20° to -30° vertical (50° total)
Di	9 dB (400 – 16k Hz average)
Q	8 (400 – 16k Hz average)
Connectors	Neutrik Speakon™ NL4. MF 1+, 1-; HF/VHF 2+, 2-
Enclosure	Heavily braced 15 mm tour-grade plywood with 16 M10 load-rated attachment points
Dimensions (HWD)	40" x 31.5" x 19" (1016 mm x 800.1 mm x 482.6 mm)
Weight – Net / Shipping	121 lb (54.8 kg) / 132 lb (59.7 kg)

SPL and Impedance vs. Frequency



Dimensions



Front Side Top

Mailing Address:

QSC Audio Products, LLC

1675 MacArthur Boulevard

Costa Mesa, CA 92626-1468 USA

Telephone Numbers:

Main Number: (714) 754-6175

Sales & Marketing: (714) 957-7100 or toll free (USA only) (800) 854-4079

Customer Service: (714) 957-7150 or toll free (USA only) (800) 772-2834

Facsimile Numbers:

Sales & Marketing FAX: (714) 754-6174

Customer Service FAX: (714) 754-6173

World Wide Web:

www.qscaudio.com

E-mail:

info@qscaudio.com

service@qscaudio.com

© 2009 QSC Audio Products, LLC. All rights reserved. QSC, and the QSC logo are registered trademarks of QSC Audio Products, LLC in the U.S. Patent and Trademark office and other countries. Speakon is a trademark of Neutrik. Kapton is a trademark of DuPont. All other trademarks are the property of their respective owners. Patents may apply or be pending.

Passionate About Sound